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(54) Dispenser for sheetwise delivery of a material in roll form

(57) For hygienic reasons and to prevent waste, the invention describes a dispenser for sheetwise delivery of a material in roll form, for example paper hand towels and toilet seat covers, in which a roll (2) is rotatably mounted in a housing (1) and in which a delivery slot (5) through which the material is guided outward is located, the rotary motion of the roll (2) being locked by way of a releasable interlock (10) after delivery of a single sheet, and later being released again. It is particularly advantageous to make the interlock (10) releasable by way of a coin-operated mechanism (6-11).

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Dispenser for sheetwise delivery of a material in roll form

The invention refers to a dispenser for sheetwise delivery of a material in roll form, for example paper hand towels and toilet seat covers, having a housing in which the roll is rotatably mounted and a delivery slot through which the material is guided outward.

It is commonly known in the existing art to manufacture hand towels and toilet seat covers from paper, so they can be discarded after a single use. This action ensures that transfer of disease-causing agents, bacteria, or the like to subsequent users is no longer possible. For this reason, such apparatuses are located principally in places frequently patronized by the public, for example public restrooms, service areas, hospitals, schools, or the like. Presentation is accomplished with a dispenser in which either the individual units are placed in stacked fashion and can be removed successively, or the materials are coiled together in roll form and separated into sheets by perforations, and the roll can be guided outward through a delivery slot and each individual sheet can be detached, for example using a tear-off edge. The surrounding housing ensures that the material in roll form present therein is not soiled and cannot be contaminated with disease-causing agents.

It is to be regarded as disadvantageous that, in particular in a context of careless or malicious behavior, a much greater number of hand towels or toilet seat covers than necessary can be pulled out of the housing and removed, resulting in a substantial and ultimately excessive waste of hand towels and toilet seat covers.

Proceeding therefrom, the object of the invention is to create an apparatus which ensures that only a single unit of the removable material, i.e. for example the hand towels or toilet seat covers, can be given out.

This object is achieved, according to the present invention, in that after delivery of a single sheet, the rotary motion of the roll is inhibited by way of a releasable interlock and later released again. This action ensures that only a single sheet can be pulled out of the housing, with the advantageous result that waste and malicious emptying can no longer occur. For the user, it is entirely sufficient if a single unit of the hand towel or toilet seat cover is made available to him. It is furthermore to be regarded as an advantage that the interlock to be applied according to the present invention engages directly on the roll arranged in the housing, so that significant operating elements (e.g. levers or the like) protruding beyond the housing can be omitted, and such elements can essentially no longer be damaged. Also to be regarded as useful, lastly, is the theoretical possibility of installing and setting up the dispenser according to the present invention with no need to make available an electrical power connection.

In the event the interlock is embodied mechanically, no power source at all is necessary; otherwise the necessary electrical energy can be obtained from built-in batteries.

In the context of the invention, there are no fundamental limitations in terms of the physical configuration of the interlock that provides locking of the roll and, in particular, its releasability. It has, however, been recognized as particularly advantageous to achieve this by way of a coin-operated mechanism. After insertion of a specific amount in coin, the interlock on the roll is released, allowing the latter to rotate until one unit of the rolled material leaves the delivery slot and is torn off there. At that moment the roll is once again immobilized by the interlock. The term "coin-operated mechanism" is to be construed broadly in the context of the invention. It encompasses both mechanical and electromechanical, in particular including semi-automatic and automatic, coin-operated mechanisms. With the mechanical types, firstly the coin is checked after passing through the insertion slot; if the outcome is positive, it then falls into a pocket or cutout of the triggering apparatus, so that the triggering mechanism is actuated and the

interlock lever releases the interlock mechanism to initiate the rotary motion of the roll. With electromechanical coin-operated mechanisms, the coin accepted by the coin checker actuates a contact or microswitch and delivers a pulse to the delivery mechanism (automatic operation) or to a relay that closes a circuit to the selector button to be actuated by the customer (semi-automatic operation). Release of the interlock is accomplished by triggering a puller magnet or starting an electric motor. The great advantage of using a coin-operated mechanism on the one hand lies in the possibility of monetary income, allowing the costs involved in refilling the housing to be at least partially defrayed; on the other hand, with electromechanical designs there are no protruding parts that could be pulled out or otherwise damaged.

In a further embodiment, provision is made to release the interlock by way of a timing element. Upon withdrawal of a single sheet, the roll is locked for a specified defined, but adjustable, time, so that only after that interval has elapsed is it possible to remove the next individual sheet. This, too, allows waste of the material given out by the dispenser to be largely eliminated.

Lastly, it is also proposed to release the interlock by way of a light barrier and/or a step contact. Installation and wiring are performed in such a way that when a person enters or leaves the space equipped with the dispenser, a control pulse is triggered, switching a relay which releases the interlock. This then guarantees that the next individual sheet can be removed only when the next person enters, thus ensuring that in no circumstances can one person achieve the delivery of multiple sheets.

The invention will be explained below in more detail with reference to an exemplary embodiment depicted in the drawings.

The Figure shows a dispenser according to the present invention delivering paper toilet seat covers, release of the interlock being accomplished by way of a coin-operated mechanism and the front wall being removed to make its construction more visible.

Located in a housing 1 is a roll 2 on which the materials to be dispensed -- in this case, paper toilet seat covers -- are rolled. Roll 2 is mounted in such a way that it is removable and can quickly and easily be replaced with a fresh (full) roll. The individual

sheets are still cohesive but can easily be separated from one another, for which purpose, in the present case, inwardly trending slits are applied at the respective defined separation points 3. The material in sheet form is placed into the dispenser depicted here in such a way that it travels outward via two guide rollers 4, each applied externally, and a delivery slot 5 located in the bottom of housing 1. After insertion of a fresh roll 2, the material in sheet form must therefore be threaded through and guided outward through delivery slot 5.

The essence of the present invention consists in the control part located in the right-hand part of housing 1, which, in the exemplary embodiment shown, is actuated by way of a coin-operated mechanism. This part is thus constituted by a coin slot 6 into which the appropriate number of coins is inserted in order to release the material. This is followed by a coin checker 7 which checks the inserted money in the usual fashion in terms of diameter, thickness, mass, and milling depth. The accepted coin moves from there through a coin chute 8 onto a coin contact 9 with which a control element, connected to an interlock 10, is activated, and in turn causes interlock 10, connected to the shaft of a guide roller 4 and preventing rotation, thereby to be released, a battery 12 being used as the energy source. By insertion of the corresponding number of coins, the rotation of a guide roller 4 is enabled, a second guide roller (not depicted here) resting against the latter in order to grip the material is also caused to rotate, and the material is moved outward until one individual sheet of the toilet seat covers has traveled out through delivery slot 5. Sensors (not shown here), which sense the corresponding coiled edge length of the material prior to leaving housing 1 and act accordingly on control element 10, can be used for this purpose.

After actuation of coin contact 9, the coin is conveyed to money cassette 11 for storage and later removal.

The exemplary embodiment shown is to be classified as an automatic machine. The desired material is released simply by insertion of the required coins, with no need for additional actions by the operator (except for removal). An individual sheet of the hygienic toilet seat cover can be removed as soon as the corresponding coinage amount has been inserted. A further advantage may be seen in the fact that insertion of

the requisite coins results in the accumulation, after a certain time, of a sum of money that can be used, for example, to purchase a new roll 2 usable for replacement.

Claims

1. A dispenser for sheetwise delivery of a material in roll form, for example paper hand towels and toilet seat covers, having a housing in which the roll is rotatably mounted and a delivery slot through which the material is guided outward,
wherein the rotary motion of the roll (2) is locked by way of a releasable interlock (10) after delivery of a single sheet, and later released again.
2. The dispenser as defined in Claim 1, wherein the interlock (10) is releasable by way of a coin-operated mechanism (6-11).
3. The dispenser as defined in Claim 1 or 2, wherein the interlock (10) is released by way of a timing member.
4. The dispenser as defined in any of Claims 1 through 3, wherein the interlock (10) is released by way of a light barrier and/or a step contact.